

## REMARKS

### STATUS OF THE CLAIMS

In accordance with the foregoing, the specification and claims 1, 3 and 9-16 have been amended. New claim 19 has been added. Claims 1-19 are pending and under consideration.

No new matter is being presented, and approval and entry of the amended and new claims are respectfully requested.

### CHANGES TO THE SPECIFICATION

On page 2, item 3, of the Action, the Abstract of the disclosure is objected because it is prefaced with "provided is". The Abstract is amended herein to comply with the requirements set forth in the MPEP §608.01(b). Approval of the amended Abstract is respectfully requested.

On page 2, item 4, of the Action, the Title is objected to as not being descriptive. The Title is amended as the Examiner suggests, to read, "Information Processing Unit and Information Processing Method Utilizing Prefetch". Approval of the amended Title is respectfully requested.

### CLAIM OBJECTIONS

On page 3, item 5, of the Action, the Examiner objects to claims 1 and 10 stating that the phrase "being twice or more as large" is awkward. Independent claims 1 and 10 are amended herein as suggested by the Examiner, to recite, "being at least twice as large". As a result, the objections to claims 1 and 10 are respectfully overcome.

### REJECTIONS OF CLAIMS 1-18 UNDER 35 U.S.C. §112, SECOND PARAGRAPH

On pages 3-4, items 6-8, of the Action, claims 1-18 are rejected under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter of the invention.

Specifically, the Examiner states that the phrase "being twice or more as large", as recited in independent claims 1 and 10 does not have a clearly defined bound. As stated above, independent claims 1 and 10 are amended to recite, "being at least twice as large", which clearly points out and distinctly claims the subject matter of the invention. Thus, the rejections of independent claims 1 and 10, as well as dependent claims 2-9 and 11-18, are respectfully overcome.

Claims 1-18 are also rejected under 35 U.S.C. §112, second paragraph, due to lack of

antecedent basis in various claims. The claims are amended herein to include sufficient antecedent basis.

On page 4, paragraph 3, of the Action, the Examiner states that the term “the instruction cache memory”, as recited in claims 3, 4, 12 and 13, lacks antecedent basis. Applicants respectfully disagree. Claims 3 and 4 depend from claim 2, and claims 12 and 13 depend from claim 11. Claims 2 and 11 recite “an instruction cache memory” and, thereby, provide sufficient antecedent basis for claims 3, 4, 12 and 13. Thus, the rejections of claims 3, 4, 12 and 13 should be withdrawn.

Further, on page 4, paragraph 4, of the Action, the Examiner states that the term “the instruction”, as recited in line 3 of claim 4 and line 4 of claim 13, lacks antecedent basis. Applicants respectfully disagree. The term “the instruction” refers to the instruction prefetched through a bus with its width being at least twice as large as an instruction length, as recited in independent claims 1 and 10. Thus, the rejections of claims 4 and 13 should be withdrawn.

REJECTIONS OF CLAIMS 1-2, 4-6, 9-11, 13-15 AND 18 UNDER 35 U.S.C. §102(b) AS BEING ANTICIPATED BY KRUEGER ET AL. (U.S. PATENT NO. 6,195,735 B1)

The rejections of claims 1-2, 4-6, 9-11, 13-15 and 18 are respectfully traversed and reconsideration is requested.

The present invention, as recited in independent claims 1 and 10, provides performing a prefetch request to prefetch a branch target instruction when a branch instruction is decoded, otherwise performing the prefetch request sequentially to prefetch instructions; and prefetching the branch target instruction to said prefetch buffer when a branch is ensured to occur by executing the branch instruction, while ignoring the branch target instruction when a branch does not occur.

In contrast, the cited portion of Krueger et al. (hereinafter “Krueger”) merely discloses that a prefetch service block 80 receives a prefetch request 82. Prefetch service block 80 outputs a response indicator 84, which directs the type of response, if any, to be taken in response to a given prefetch request 82. (See column 12, lines 7-14).

Therefore, Krueger fails to teach or even suggest prefetching the branch target instruction *when a branch is ensured to occur*, while ignoring the branch target instruction *when a branch does not occur*. In fact, Krueger makes no mention of whether the prefetching is dependent upon the occurrence of a branch, as disclosed in the present invention.

Furthermore, independent claims 1 and 10 recite a prefetch buffer prefetching an instruction through *a bus with its width being at least twice as large as an instruction length*, to

store the prefetched instruction.

The Examiner states, on page Krueger discloses this feature, citing column 13, table 2, which provides that at least two-times the instruction length is prefetched. That is, Krueger merely discloses that requesting 54 to 256 byte prefetch instructions.

However, it is respectfully submitted that Krueger neither teaches nor suggests that the *bus width* is at least twice as large as an instruction length to store the prefetched instruction, as recited in independent claims 1 and 10.

Therefore, it is respectfully submitted that independent claims 1 and 10, as well as the pending dependent claims, patentably distinguish over the prior art.

**REJECTIONS OF CLAIMS 7-8 AND 16-17 FOR OBVIOUSNESS UNDER 35 U.S.C. §103(a) AS BEING UNPATENTABLE OVER KRUEGER IN VIEW OF HANAWA ET AL. (U.S. PATENT NO. 5,269,007)**

Claims 7-8 depend from independent claim 1 and claims 16-17 depend from independent claim 10. Claims 7-8 and 16-17 inherit the patentability of their respective base claim and, thus, it is respectfully submitted that claims 7-8 and 16-17 patentably distinguish over the prior art.

Further, Hanawa et al. is merely cited as disclosing allowing, when a delayed branch instruction appears, a branch to occur following an instruction subsequent to the delayed branch instruction; and an unconditional branch instruction. Therefore, it is respectfully submitted that Hanawa et al. also fails to teach or suggest the features of the independent claims.

**REJECTIONS OF CLAIMS 3 AND 12 FOR OBVIOUSNESS UNDER 35 U.S.C. §103(a) AS BEING UNPATENTABLE OVER KRUEGER IN VIEW OF DEAN (U.S. PATENT NO. 5,544,342)**

Claims 3 and 12 depend from independent claims 1 and 10, respectively, and inherit the patentability thereof. Thus, it is respectfully submitted that claims 3 and 12 patentably distinguish over the prior art.

Further, Dean is merely cited as disclosing a control signal canceling the prefetch request, which has been performed to prefetch the branch target instruction, when the branch does not occur, to thereby prevent the access to the main memory, the access being caused by a cache miss. Therefore, it is respectfully submitted that Dean also fails to teach or suggest the features of the independent claims.

NEW INDEPENDENT CLAIM 19

New independent claim 19 recites:

An information processing method, comprising:  
prefetching an instruction through a bus with a width at least twice as large as the length of the instruction, and storing the prefetched instruction;  
performing a prefetch request to prefetch a branch target instruction when a branch instruction is decoded, otherwise performing the prefetch request sequentially to prefetch instructions; and  
prefetching the branch target instruction when a branch is ensured to occur by executing the branch instruction, and ignoring the branch target instruction when a branch does not occur.

Therefore, it is respectfully submitted that independent claim 19 patentably distinguishes over the prior art, for at least the reasons provided above for independent claims 1 and 10.

CONCLUSION

In accordance with the foregoing, it is respectfully submitted that all outstanding objections and rejections have been overcome and/or rendered moot. Further, all pending claims patentably distinguish over the prior art. There being no further outstanding objections or rejections, it is submitted that the application is in condition for allowance. An early action to that effect is courteously solicited.

Finally, if there are any formal matters remaining after this response, the Examiner is requested to telephone the undersigned to attend to these matters.

If there are any additional fees associated with filing of this Amendment, please charge the same to our Deposit Account No. 19-3935.

Respectfully submitted,

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